

Claims

1. A pipeline examination apparatus for Direct Current Voltage Gradient (DCVG) and Closed Interval Potential Survey (CIPS) methods, which detects and analyzes at least one electrode signal while supplying an anticorrosive current to a buried pipeline by switching on and off the anticorrosive current at predetermined intervals, comprising:

- a signal detection unit detecting the electrode signal including a DCVG electrode signal and/or a CIPS electrode signal; and

- a measurement unit receiving the electrode signal from the signal detection unit and analyzing the electrode signal,

- wherein the measurement unit comprises,

- a measurement method selection unit selecting any or both of the DCVG electrode signal and the CIPS electrode signal to be detected by the signal detection unit,

- a control unit receiving the electrode signal from the signal detection unit,

- a storage unit storing the electrode signal received by the control unit,

- a analysis unit analyzing the electrode signal stored in the storage unit, and

- a display unit displaying the electrode signal received by the control unit and analysis results obtained from the analysis unit, and

wherein the control unit controls the signal detection unit to detect the electrode signal on the basis of selection of the measurement method selection unit, and controls storage, analysis and display of the electrode signal.

2. The pipeline examination apparatus according to claim 1, wherein the measurement unit is a touch-screen type Personal Digital Assistant (PDA), and the signal detection unit and the measurement unit communicate with each other through a serial or parallel interface.

3. The pipeline examination apparatus according to claim 1, wherein the measurement method selection unit selects a pulse period of the electrode signal received by the control unit so that the pulse period is synchronized with an ON/OFF period of the anticorrosive current.

4. The pipeline examination apparatus according to claim 1, wherein the analysis of the electrode signal is performed by sequentially extracting a magnitude of the electrode signal stored in the storage unit over time, and the display unit displays the sequential electrode signal over time.

5. The pipeline examination apparatus according to claim 1, wherein the measurement unit further comprises an output unit capable of outputting the analysis results.

6. The pipeline examination apparatus according to claim 1, wherein the signal detection unit comprises:

a measured value input unit receiving a DCVG electrode signal measured using a DCVG method and a CIPS electrode signal measured using a CIPS method through one or more probes, the measured value input unit including switching means that switches over an operation of selectively receiving the DCVG electrode signal and the CIPS electrode signal and an operation of simultaneously receiving the DCVG electrode signal and the CIPS electrode signal;

a DCVG input amplifier amplifying an input value of the DCVG electrode signal;

a CIPS input amplifier amplifying an input value of the CIPS electrode signal; and

an Analog/Digital (A/D) converter converting analog signals received from the DCVG input amplifier and the CIPS input amplifier into digital signals.

7. The pipeline examination apparatus according to claim 6, wherein the DCVG and CIPS input amplifiers employ different amplification schemes.

8. The pipeline examination apparatus according to claim 6, wherein the DCVG input amplifier employs an emitter follower amplification scheme and the CIPS input amplifier employs a

differential input amplification scheme.